SUBCHAPTER F: STANDARDS FOR CLASS III WELL PRODUCTION AREA DEVELOPMENT
§§331.101 - 331.110
Effective December 11, 2014

§331.101. Applicability.

This subchapter establishes additional standards for Class III well injection activities regarding the development of production or other areas authorized by an area permit and/or production area authorization.

Effective May 13, 1986

§331.102. Confinement of Mining Solution.

Mining solutions shall be confined to the production zone within the area of designated production zone monitor wells.

Effective May 13, 1986

§331.103. Production Area Monitor Wells.

(a) Production zone monitoring. Designated production zone monitor wells shall be spaced no greater than 400 feet from the production area, as determined by exploratory drilling. The distance between adjacent mine area monitor wells shall be no greater than 400 feet. The angle formed by lines drawn from any production well to the two nearest monitor wells will not be greater than 75 degrees. Changes or adjustments in designated production zone monitor well locations may be authorized by the executive director so as to assure adequate containment. These wells shall be subject to the sampling, corrective action, and reporting requirements in §331.105 of this title (relating to Monitoring Standards) and §331.106 of this title (relating to Remedial Action for Excursion).

(b) Nonproduction zone monitoring. At a minimum, designated nonproduction zone monitor wells shall be completed in the production area in any freshwater aquifer overlying the production zone. These wells shall be located not more than 50 feet on either side of a line through the center of the production area with a minimum of one per every four acres of production area for wells completed in the first overlying freshwater aquifer and one per every eight acres for wells completed in any additional overlying freshwater aquifers. Changes or adjustments in designated nonproduction zone monitor well locations may be authorized by the executive director so as to assure adequate containment. Those wells completed in the first overlying freshwater aquifer shall be subject to sampling, remedial action, and reporting requirements of §331.105 of

this title and §331.106 of this title. Monitor wells completed in any additional overlying freshwater aquifers shall be subject to monitoring, remedial action, and reporting requirements specified in the permit.

Adopted February 11, 2009 Effective March 12, 2009

§331.104. Establishment of Baseline and Control Parameters for Excursion Detection.

(a) Independent and representative water samples shall be collected from each of the following:

(1) mine area monitor wells completed in the production zone;

(2) mine area monitor wells completed in nonproduction zones; and

(3) baseline wells completed in the production zone within the production area.

(b) All baseline wells must be completed in the production zone within the production area. The owner or operator shall analyze all groundwater samples from the baseline wells for the following parameters. This suite of parameters shall be the basis for the aquifer restoration required under §331.107 of this title (relating to Restoration). With the exception of uranium and radium-226, any of these parameters may be removed from the list of restoration parameters if an applicant or permittee can demonstrate that a parameter or parameters is not a suitable restoration parameter. An applicant or permittee also can demonstrate that a parameter should be added to the list of restoration parameters. The executive director may require an applicant or operator to establish baseline parameters additional to the above list as appropriate, based on site-specific information. In evaluating a demonstration regarding removing or adding parameters to the list of parameters, the executive director may consider the following:

Figure: 30 TAC §331.104(b)

Calcium (Ca) in mg/L	Alkalinity (Alk) in standard units
Magnesium (Mg) in mg/L	pH in standard units
Sodium (Na) in mg/L	Arsenic (As) in mg/L
Potassium (K) in mg/L	Cadmium (Cd) in mg/L
Carbonate (CO_3) in mg/L	Iron (Fe) in mg/L
Bicarbonate (HCO_3) in mg/L	Lead (Pb) in mg/L
Sulfate (SO_4) in mg/L	Manganese (Mn) in mg/L
Chloride (Cl) in mg/L	Mercury (Hg) in mg/L
Nitrate (NO_3, as nitrogen (N)) in mg/L	Molybdenum (Mo) in mg/L

Fluoride (F) in mg/L	Selenium (Se) in mg/L
Silica (SiO_2) in mg/L	Uranium (U) in mg/L
Total Dissolved Solids (TDS) in mg/L	Ammonia as N (N) in mg/L
Electrical Conductivity (EC) in unhos/cm	Radium-226 (Ra-226) in pCi/L

(1) all parameters that occur in the groundwater within the production zone prior to in situ recovery;

(2) all parameters that are in the solutions injected into the production zone;

(3) all parameters that may be dissolved from the aquifer material of the production zone into the groundwater during in situ recovery; or

(4) any other applicable information provided by the applicant or permittee.

(c) A minimum of five baseline wells, or one baseline well for every four acres of production area, whichever is greater, shall be completed in the production zone within the production area. All baseline wells shall be sampled in accordance with subsection (a) of this section and analyzed in accordance with subsection (d) of this section. All valid analytical measurements shall be used to determine the suite of restoration parameters required under subsection (b) of this section.

(d) All samples shall be collected, preserved, analyzed, and controlled according to accepted methods as stated in the permit and in accordance with the TCEQ Quality Assurance Project Plan (QAPP).

(e) The permittee shall propose for subsequent approval by the commission control parameters for detection of excursions in production and nonproduction wells. Control parameters shall be those constituents in the groundwater that will provide timely and reliable detection of the presence of mining solutions in production and nonproduction wells. Control parameter upper limits for production zone monitor wells shall be determined from pre-mining groundwater sample data from production zone monitor wells, and control parameter upper limits for nonproduction zone monitor wells shall be determined from pre-mining groundwater sample data from nonproduction zone monitor wells. Determination of the presence of an excursion shall be based on a statistical method proposed by the owner or operator and approved by the executive director.

(f) If a previously mined permit or production area is to be re-entered for additional in situ mining before completion of restoration under §331.107 of this title or

completion of closure under §331.83 of this title (relating to Closure), baseline water quality values for determination of control parameter upper limits and aquifer restoration requirements for the area to be re-entered for mining shall be as originally required by the existing production area authorization or as modified by any amendments to the authorization pursuant to this section and §331.107 of this title.

(g) If a previously mined and restored area is to be re-entered for additional in situ uranium mining, baseline water quality values for determination of control parameter upper limits and aquifer restoration requirements for the area to be re-entered for mining shall be determined as required by subsections (a) - (d) of this section.

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§331.105. Monitoring Standards.

The following shall be accomplished to detect mining solutions in designated monitor wells:

(1) Routine monitoring. Water samples and, if applicable, field instrument measurements, shall be conducted in accordance with the requirements of §331.84(c) of this title (relating to Monitoring Requirements) from all monitor wells for permit/production area(s) in which mining solutions have been introduced. Monitoring results for the control parameters shall be completed by the second working day and reported as required in §331.85(e) of this title (relating to Reporting Requirements). The determined values shall be entered on appropriate forms within three working days after analysis or instrument measurement. These data shall be kept readily available on site for review by commission representatives.

(2) Monitoring duration. The program of monitoring detailed in paragraph (1) of this subsection shall be continued in each permit/mine area until the executive director is officially notified that restoration has commenced. Further monitoring as required by permit shall continue until aquifer restoration and stabilization in that particular permit/mine area has been achieved in compliance with §331.107 of this title (relating to Restoration).

(3) Verifying analysis. If the results of a routine sample analysis or instrument measurement show that the value of any control parameter in designated monitor wells is equal to or above the upper limit established for that permit/mine area, the operator shall complete a verifying analysis of samples taken from each apparently affected well within two days.

(4) Excursion monitoring. During the period of time when mining solutions are present in a designated monitor well, water samples or measurements will be taken at least two times per week and monitoring results for all control parameters shall be completed by the second day after the sample or measurement is taken.

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§331.106. Remedial Action for Excursion.

If the verifying analysis indicates the existence of an excursion in a designated monitor well, the operator shall take the following actions:

(1) notification--notify the commission regional office by the next working day by telephone and notify the executive director by letter postmarked within 48 hours of identification of the excursion. The notification must identify the affected monitor well and the control parameter concentrations.

(2) analysis--complete a groundwater analysis report for each affected well on forms provided by the executive director (including accuracy checks and stiff diagram) for the following: pH, calcium, magnesium, sodium, potassium, carbonate, bicarbonate, sulfate, chloride, silica, total dissolved solids (180 degrees Celsius), specific conductance and dilute conductance, uranium, radium-226 and any other specified constituents. Results shall be reported in accordance with §331.85(f) of this title (relating to Reporting Requirements).

(A) The permittee will clean up all designated monitor wells, all zones outside of the production zone, and the production zone outside of the mine area that contain mining solutions. The permittee may use any method judged necessary and prudent to define the extent of the mining solutions and to effect this clean-up in an expeditious and practical manner. Well clean-up is deemed to be accomplished when the water quality in the affected monitor well(s) has been restored to current local baseline water quality as confirmed by three consecutive daily samples for the control parameters.

(B) The executive director may determine that cleanup is not necessary if the permittee can demonstrate that the change in water quality is not due to the presence of mining solutions or fluids from other mining activities.

Adopted February 11, 2009 Effective March 12, 2009

§331.107. Restoration.

(a) Aquifer restoration. Groundwater in the production zone within the production area must be restored when mining is complete. Each Class III permit or production area authorization shall contain a description of the method for determining that groundwater has been restored in the production zone within the production area. Restoration must be achieved for all values in the restoration table of all parameters in the suite established in accordance with the requirements of §331.104(b) of this title (relating to Establishment of Baseline and Control Parameters for Excursion Detection).

(1) Restoration table. Each permit or production area authorization shall contain a restoration table for all parameters in the suite established in accordance with the requirements of §331.104(b) of this title. The restoration value for each parameter listed in the restoration table cannot exceed the maximum value for the respective parameter in the permit range table required under §331.82(e)(7) of this title (relating to Construction Requirements). A restoration table value for a parameter shall be established by:

(A) the mean concentration or value for that parameter based on all measurements from groundwater samples collected from baseline wells prior to mining activities; or

(B) a statistical analysis of baseline well information proposed by the owner or operator and approved by the executive director that demonstrates that the restoration table value is representative of baseline quality.

(2) Achievement of restoration. Achievement of restoration shall be determined using one of the following methods:

(A) when all sample measurements from groundwater samples from all baseline wells for a restoration parameter are equal to or below (or, in the case of pH, within an established range) the restoration table value for that parameter, then restoration for that parameter will be assumed to have occurred. Complete restoration will be assumed to have occurred when measurements from all samples from all baseline wells for all restoration parameters are equal to or below (or, in the case of pH, within an established range) each respective restoration table value; or

(B) a statistical analysis of information from groundwater samples from baseline wells proposed by the owner or operator and approved by the executive director that demonstrates that the groundwater quality is representative of the restoration table values.

(b) Mining completion. When the mining of a permit or production area is completed, the permittee shall notify the appropriate commission regional office and the executive director and shall proceed to reestablish groundwater quality in the affected

permit or production area aquifers in accordance with the requirements of subsection (a) of this section. Restoration efforts shall begin as soon as practicable but no later than 30 days after mining is completed in a particular production area. The executive director, subject to commission approval, may grant a variance from the 30-day period for good cause shown.

(c) Timetable. Aquifer restoration, for each permit or production area, shall be accomplished in accordance with the timetable specified in the currently approved mine plan, unless otherwise authorized by the commission. Authorization for expansion of mining into new production areas may be contingent upon achieving restoration progress in previously mined production areas within the schedule set forth in the mine plan. The commission may amend the permit to allow an extension of the time to complete restoration after considering the following factors:

(1) efforts made to achieve restoration by the original date in the mine plan;

(2) technology available to restore groundwater for particular parameters;

(3) the ability of existing technology to restore groundwater to baseline quality in the area;

(4) the cost of achieving restoration by a particular method;

(5) the amount of water which would be used or has been used to achieve restoration;

(6) the need to make use of the affected aquifer; and

(7) complaints from persons affected by the permitted activity.

(d) Reports. Beginning six months after the date of initiation of restoration of a permit or production area, as defined in the mine plan, the operator shall provide to the executive director semi-annual restoration progress reports until restoration is accomplished for the production area. This report shall contain the following information:

(1) all analytical data generated during the previous six months;

(2) graphs of analysis for each restoration parameter for each baseline well;

(3) the volume of fluids injected and produced;

(4) the volume of fluids disposed;

(5) water level measurements for all baseline and monitor wells, and for any other wells being monitored;

(6) a potentiometric map for the area of the production area authorization, based on the most recent water level measurements; and

(7) a summary of the progress achieved towards aquifer restoration.

(e) Restoration table values achieved. When the permittee determines that constituents in the aquifer have been restored to the values in the Restoration Table, the restoration shall be demonstrated by stability sampling in accordance with subsection (f) of this section.

(f) Stability sampling. The permittee shall obtain stability samples and complete an analysis for certain parameters listed in the restoration table from all production area baseline wells. Stability samples shall be conducted at a minimum of 30-day intervals for a minimum of three sample sets and reported to the executive director. The permittee shall notify the executive director at least two weeks in advance of sample dates to provide the opportunity for splitting samples and for selecting additional wells for sampling, if desired. To insure water quality has stabilized, a period of one calendar year must elapse between cessation of restoration operations and the final set of stability samples. Upon acknowledgment in writing by the executive director confirming achievement of final restoration, the permittee shall accomplish closure of the area in accordance with §331.86 of this title (relating to Closure).

(g) Amendment of restoration table or range table values. After an appropriate effort has been made to achieve restoration in accordance with the requirements of subsection (a) of this section, the permittee may cease restoration operations, reduce bleed and request that the restoration table be amended. An amended restoration table value for each parameter listed in the restoration table cannot exceed the maximum value for the respective parameter in the permit range table required under §331.82(e)(7) of this title. With the request for amendment of the restoration table values, the permittee shall submit the results of three consecutive sample sets taken at a minimum of 30-day intervals from all production area baseline wells used in determining the restoration table to verify current water quality. Stabilization sampling may commence 60 days after cessation of restoration operations. The permittee shall notify the executive director of his or her intent to cease restoration operations and reduce the bleed 30 days prior to implementing these steps. The permittee shall submit an application for an amendment to the restoration table within 120 days of receipt of authorization from the executive director to cease restoration operations and reduce the

bleed. If any restoration table value for any parameter listed in the restoration table will exceed the maximum value for the respective parameter in the permit range table, the permittee must submit an application for a major amendment of the permit range table.

(1) In determining whether the restoration table or range table should be amended, the commission will consider the following items addressed in the request:

(A) uses for which the groundwater in the production area was suitable at baseline water quality levels;

(B) actual existing use of groundwater in the production area prior to and during mining;

(C) potential future use of groundwater of baseline quality and of proposed restoration quality;

(D) the effort made by the permittee to restore the groundwater to baseline;

(E) technology available to restore groundwater for particular parameters;

(F) the ability of existing technology to restore groundwater to baseline quality in the area under consideration;

(G) the cost of further restoration efforts;

(H) the consumption of groundwater resources during further restoration; and

(I) the harmful effects of levels of particular parameter.

(2) The commission may amend the restoration table or range table if it finds that:

(A) reasonable restoration efforts have been undertaken, giving consideration to the factors listed in paragraph (1) of this subsection;

(B) the values for the parameters describing water quality have stabilized for a period of one year;

(C) the formation water present in the exempted portion of the aquifer would be suitable for any use to which it was reasonably suited prior to mining; and

(D) further restoration efforts would consume energy, water, or other natural resources of the state without providing a corresponding benefit to the state.

(3) If the restoration table is amended, restoration sampling shall commence and proceed as described in subsection (f) of this section, except the stability period shall be for a period of two years unless the owner or operator can demonstrate through modeling or other means that a period of less than two years is appropriate for a demonstration of stability.

(4) If the request for an amendment of the restoration table or range table values is not granted, the permittee shall restart restoration efforts.

Adopted November 19, 2014 Effective December 11, 2014

§331.108. Opportunity for a Contested Case Hearing on a Production Area Authorization Application.

(a) An application for a new production area authorization is not subject to opportunity for a contested case hearing if:

(1) the authorization is for a production area within the boundary of the permit under which the authorization will be issued and the permit includes a range table with values established in accordance with the requirements in §305.49(a)(10) of this title (relating to Additional Contents of Application for an Injection Well Permit);

(2) the application includes a restoration table with restoration parameter values that do not exceed the high values for the respective parameters in the permit range table; and

(3) the application is for a production area within the boundary of the permit under which the proposed authorization will be issued, and the application meets the requirements at §331.104(a) - (d) of this title (relating to Establishment of Baseline and Control Parameters for Excursion Detection) regarding baseline wells; or

(4) the application requests authorization for a new, and subsequent, production area within the permit boundary of a permit after the first production area authorization has been issued for a production area within the permit boundary.

(b) An application to amend a restoration table included in an issued production area authorization is not subject to opportunity for a contested case hearing if the restoration parameter values in the proposed amended restoration table do not exceed the respective values in the permit range table included in the permit under which the production area authorization was issued.

(c) An application to amend a restoration table to increase any restoration table value included in an issued production area authorization is subject to opportunity for a contested case hearing if the permit under which the production area authorization was issued does not include a permit range table, established in accordance with the requirements of §305.49(a)(10) of this title.

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§331.109. Cost Estimates for Financial Assurance.

(a) Each production area authorization must establish the amount of financial assurance for aquifer restoration of the production area based upon cost estimates provided under §331.143 of this title (relating to Cost Estimate for Plugging and Abandonment and Aquifer Restoration) approved by the executive director.

(b) Each area permit or production area authorization must establish the amount of financial assurance for plugging and abandonment of the injection wells, production wells, recovery wells, monitor wells, and baseline wells of the permit area or production area based upon cost estimates provided under §331.143 of this title approved by the executive director.

Adopted February 11, 2009 Effective March 12, 2009

§331.110. General Requirements for Production Area Authorization.

(a) A production area authorization may not authorize the use of groundwater from a well for purposes of providing supplemental production water.

(b) A production area authorization may not expand a permit boundary or authorize a production area outside of a permit boundary.

(c) A production area authorization may not authorize a reduction in the number of monitor wells or increase the distance between wells as required under §331.103 of this title (relating to Production Area Monitor Wells).

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